

Chapter 2

Mainstreaming of Disaster Risk Analysis into Development of Gabala District, Azerbaijan

Abstract Disaster Risk Management and mainstreaming should be an important part of national and local development plans in the regions, where disaster risks are very high. On the one hand, the development process may reduce the risk of natural hazards, but on the other hand changes in land use planning may increase the vulnerability of the communities. In the context of disaster risks, mainstreaming is the practice of supporting communities through risk conscious land planning and development. Mainstreaming covers all the sectors of economy, including tourism, infrastructure, agriculture, and all types of community activities.

Keywords Hazards • Vulnerability • Disaster risk • Tourism • Agriculture Community • Forestry • Development planning

Gabala District is located in a disaster prone part of Azerbaijan. Current natural and social conditions in Gabala make children very vulnerable. In addition, preparedness level of schools are rather low; local schools have a reduced capacity to meet hazards without human and material losses.

In the context of disaster risks, mainstreaming is the practice of supporting communities through land planning and development. This means that regular development processes should take disaster risks into consideration, reducing risk levels in a particular area. “Risk informed development programming” is the approach according to which development interventions (i.e. building new schools and hospitals, building roads, bridges and communication lines, expanding cities and communities, building factories, etc.) support risk reduction measures. For example, road constructions take into account all possible hazards (i.e. landslides, floods, avalanches, etc.) and relevant measures are incorporated during the construction period to minimize possible impact in the future.

In addition, disaster risks can be reduced by implementing risk reduction activities in agriculture, food industry, school education, health, tourism and transport. Creation of early warning systems and other preparedness measures can also reduce risks (Benson et al. 2004; Benson and Clay 2004).

Firstly, legal and institutional grounds for DRR as well as roles and responsibilities of key stakeholders have been analyzed. Results show that DRR activities in Azerbaijan have a fairly solid legal and institutional background (UNICEF 2014).

Gabala Working Group that was established as the working group of the project made proposals for further development and planning that would reduce disaster risks. The group made proposals of a basket of activities for the upcoming year (2016), which will be included into the district budget. These proposals were approved by the local government of Gabala and will be implemented in the coming year. Development activities reflected in various national programs and action plans were consolidated into a single “2015–2020 Gabala District Development Plan” that includes a broad palette of activities to reduce disaster risks. This plan was analyzed in terms of DRR. According to the 2016–2020 plan, all the economic sectors, including tourism, agriculture, and the food industry, will make their own contributions to reduce disaster risks. Additionally, Ministry of Education, Ministry of Emergency Situations, and Ministry of Health have their own plans to reduce disaster risks in schools.

2.1 Introduction

Gabala District of Azerbaijan is located in a disaster prone zone and is well known for its frequently observed hazards. The population density in the district is rather high (Fig. 2.1). Nearly 27% of the total population is comprised of children. Recently, most of the Gabala schools were found to have fairly low structural safety levels. Schools are not well supplied with DRR equipment and at the same time, DRR preparedness of school staff is rather low. The previously conducted “Disaster Risk Analysis: Gabala District” study has identified high vulnerability of the population in the region.

The main goal of the second stage of the project was to perform child centered vulnerability assessment and to mainstream DRR activities into the development process in Gabala District. DRR actions include both structural and non-structural activities. Many development processes in hazard-prone locations interact with disaster risk by either increasing or reducing exposure and vulnerability to hazards. This study includes results of the work done by DRR experts and Gabala Working Group.

2.2 Key Principles for Mainstreaming Disaster Risk Reduction in Development

Disaster is a serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses (Correa et al. 2012). During the disaster, the ability of the affected community is not

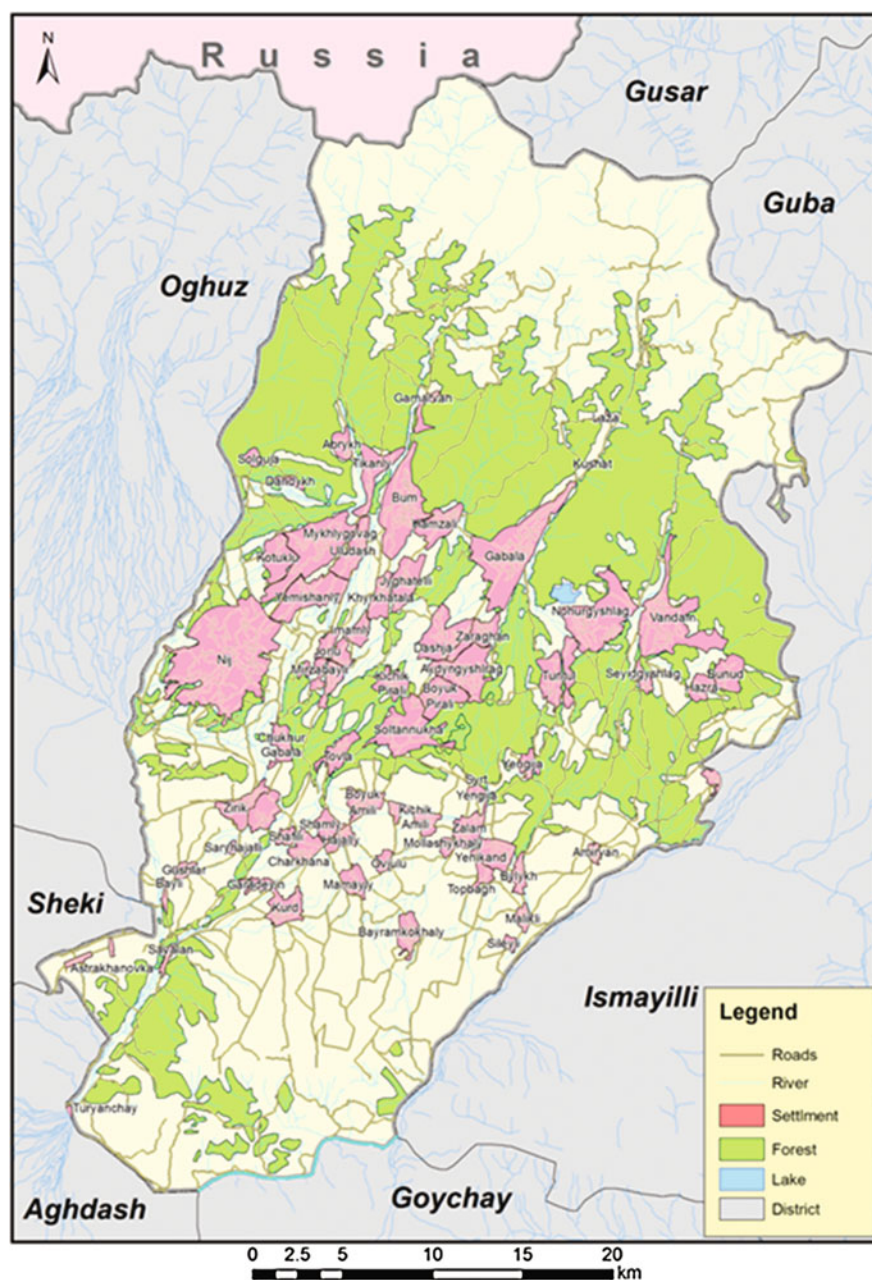


Fig. 2.1 Gabala District map

sufficient for it to cope using its own resources. A disaster is a phenomenon that has a man-made or natural origin and may cause great damage or loss of life if communities or societies have no capacity to manage the situation (UHICEF 2011).

Natural conditions in Azerbaijan expose the country to natural hazards. The main hazards observed in the area of Azerbaijan are floods, earthquakes, landslides and droughts. These phenomena cause serious damage to the economy and lives of people every year. Over the last 20 years, the frequency and severity of hazards in the territory of the country have been high and have caused considerable material and population loss to communities (Abbasov 2014).

Disasters can be understood as a combination of hazards and susceptibility or vulnerability of communities or societies to be harmed. If a community is not able to manage or cope with hazards, then disasters may happen (DRR/SD 2004).

Natural hazards that pose serious disasters can be managed through the actions of people and communities. Strengthening disaster management institutions enables communities and people to cope with various types of disasters easily (IFRCCS/PV 2009).

On the one hand, the development process may reduce the risk of natural hazards, but on the other hand, it may increase the vulnerability of the communities involved (such as through changes in land use planning). In the context of disaster risks, mainstreaming is the practice of supporting communities through risk-conscious land planning and development. This means that regular development processes take disaster risks into consideration, reducing the risk level in a particular area. Political will, correct management and strong disaster risk reduction institutions are essential to provide mainstreaming. Any development process and land use planning should be closely integrated with disaster risk management.

The mainstreaming should be integrated into all sectors of economy. The key areas to be considered in mainstreaming include poverty reduction, industry, tourism, agriculture, infrastructure, education, environment, housing and health. Environmental management, water management, land use planning, gender issues, health issues, and climate change adaptation are also areas that may be included in mainstreaming.

Despite the ongoing efforts of the government, poverty remains one of the root causes of vulnerability for the Gabala District population. According to the Second National Communication to UNFCCC, over the last 20 years, manifestations of climate change-induced phenomena have increased vulnerability even more. In several villages constricted dams and protection walls are gone due to flash floods. This drops basic living conditions in the villages to below the average country level.

Implementation of the State Program on Poverty Reduction and Sustainable Development in the Republic of Azerbaijan for 2008–2015 resulted in supporting overall economic stability in the country, including Gabala District. This ensured economic growth and stability. Many types of private business have been involved to the development process. Agriculture and tourism were the main areas of development. Recently, tourism, the food industry and processing of agricultural goods are being represented by several big enterprises. Newly built hotels and tourist attractions have created new value for the environment of Gabala,

simultaneously making new employment opportunities. Recently, the area began to be seen as one of the most important tourist destinations in Azerbaijan. Development of the tourism sector has created new work places in the district and has created prospects for further development. Support of the agricultural sector has increased income of the population, ensuring poverty reduction. However, the current situation will still require a good deal of effort to reduce poverty in the district. These efforts should mainly cover the processing, agricultural and tourism sectors, since they are the main sources of income for the local population. Hospitals, health facilities, schools and kindergartens need total improvement. Child centered assessment confirms that the condition of many schools does not enable them to provide high quality education and increases the risk of further disasters.

The disaster risks that must be reduced through key activities in these areas are given in Table 2.1:

Table 2.1 Sectorial directions of mainstreaming for Gabala District

Agriculture	Providing insurance cover for products New employment opportunities for local residents Construction of processing enterprises for agricultural products New crop developments resistant to hazards Moving agricultural activities to less hazard-prone zones Protection of lands from hazards
Education	Construction of new disaster resistant village schools Developing school safety programs and disaster management plan Including DRR into curricula Increasing awareness of children in terms of climate changes and disasters Simulation, drills and first aid training for students Increasing structural and non-structural safety of schools Provision of schools with basic sanitation means
Environment	Developing integrated schemes for natural resource management (e.g. water management, forest management) Developing climate change adaptation and mitigation programs Planting of drought resistant tree species
Infrastructure	Building roads and flood resistance bridges in disaster prone zones Developing new power and water systems and internet communications
Health	Construction of new and safe hospitals Establishing mandatory disaster insurance for population (including children) Encouraging hospital disaster management plans
Safer tourism	Construction of new hotels and recreational enterprises in disaster resistant zones Making national parks more user friendly Creating new attractions around the villages
Housing	Developing disaster resistant land use plans and building codes Enforcing zoning and building regulations Construction of pilot disaster resistant and environment friendly houses

2.3 Legislation Concerning Structural and Non-structural Safety in Azerbaijan

The legal basis is one of the most important features in mainstreaming. The legal basis is official legislation that supports DRR mainstreaming. National platforms can play a role in liaising with line ministries and other actors in shaping risk reduction policies.

The Azerbaijani legal basis on DRR and safety of communities includes:

- Town Planning and Building Codes
- Law on Fire Safety
- Law on Civil Defense
- Law on Emergency Situations
- Law on Education
- General education concept (National Curriculum) in Azerbaijan Republic

The Town Planning and Building Code of the Azerbaijani Republic was adopted in 2012. This document forms the legal grounds that stipulate principles of all town planning and building activities in the territory of the Azerbaijani Republic. This is the only document that provides legal grounds for structural safety of buildings, including school buildings. The document also provides legal grounds for the roles of government, municipalities and companies with respect to building activities.

Article 4 and 5 show the main areas of the government policy and authority in the field of urban planning and building. Article 6 talks about the authority of municipalities. Article 9 stipulates principles of fire and environmental safety of constructions and buildings. According to Article 60, all the material used in buildings must be fire-resistant and reliable to prevent the spread of fires. Walls, doors, ceilings (Article 61) and floors should be constructed from fire resistant materials and provide easy fire compartmentalization. In addition, the article suggests that fire compartments should be built so they are easily accessible during fires. According to Article 62, stairs should be easily accessible and usable during emergency evacuations. Article 54 requires that materials used in construction must be certified according to relevant requirements. All the construction materials that are used must be approved by the State Fire Control Service, since it is the main executive body that controls fire resistance of materials and buildings.

The Law on Fire Safety provides legal grounds for non-structural and structural fire safety of schools. The current law on fire safety was adopted in 1997. The law defines legal grounds and principles for state fire protection and control. The law enforces the provision of fire protection on the territory of the Azerbaijan Republic for human life and health, national treasures, and all types of property.

Article 9 of the Law on Fire Safety specifies that the State Fire Service is the main governmental body that guarantees the fire safety of all types of buildings. Article 5 stipulates functions of relevant authorities with respect to fire safety. According to this article, related executive bodies have the following functions:

- Provide for the implementation of fire safety measures in enterprises and managed areas;
- Establish and support fire service teams;
- Organize implementation of fire safety propaganda and educate the population in the area of fire safety;
- Ensure strict compliance with norms, standards and rules of fire safety by the management of government authorities, enterprises and organizations as well as citizens;
- Organize the development and provide the execution of fire safety measures;
- Organize training for the population in fire safety measures.

Article 16 is about implementation of firefighting propaganda and training of the population in fire safety measures. The article suggests that mandatory training on fire safety for children in pre-school facilities and in public schools be provided in accordance with specialized educational programs by the relevant state executive body.

Laws of the Azerbaijan Republic on Civil Defense stipulate the legal grounds and principles of civil defense in Azerbaijan Republic and regulate public relations in the field of civil defense. According to Article 5, the aim of civil defense is to prevent emergencies, minimizing the possible damage and losses due to emergencies and mitigation of emergencies and their consequences. Article 11 stipulates that the Ministry of Emergency Situations of Azerbaijan Republic carries out awareness raising in the area of protection of the population.

Laws of the Azerbaijani Republic on Municipalities (e.g., the Law on Water Economy of Azerbaijan) suggest that municipalities are the main institutions in municipality lands that may carry various types of DRR activities. According to the law, hazard risks can be reduced by joint efforts of municipalities, communities and governments. Laws on management of municipality lands stipulate that municipality lands should be managed effectively and this management should not cause high hazard risks.

2.4 Current DRR Related Institutional Framework, Roles and Responsibilities to Manage School Safety

In order to implement comprehensive DRR strategy, the stakeholders that are involved in disaster risk management should be actively involved in integrated disaster risk management. Integrated Disaster Risk management is the continuous process in which interests of all stakeholders are protected and long-term vision guarantees sustainable development.

The institutional situation in Azerbaijan is characterized by independently operating ministries and entities that form a group of DRR related stakeholders with very limited coordination, mostly on an as-needed basis only. In some cases, these roles and responsibilities duplicate each other. In order to maintain Integrated DRR

management, it is necessary to study the roles of these organizations more deeply and to develop a new institutional DRR Management scheme in the future. Government, the private sector, local communities, and civil society are the main stakeholders in Gabala District that are interested in effective and integrated disaster risk management.

Roles and responsibilities of these organizations are given here:

State Commission on Emergency Situations (Coordination of Assistance in Emergency Situations): The State Commission on Emergency Situations is a derivative body of the Council of Ministries of Azerbaijani Republic. This institution was established in 1992 before establishment of the Ministry of Emergency Situations. Currently the commission works closely with district executive powers. The Deputy Prime Minister is chairman of the commission. The aim of the commission is coordinate activities of ministries and local government bodies during emergency situations.

District Executive Powers: District Executive Powers are local government bodies that govern territories of the districts. Every district executive power has a designated local authority who is in charge of representing districts during emergency situations. This local authority is the deputy head of the district executive power.

Ministry of Emergency Situations: The Ministry of Emergency Situations is the main legal agency in Azerbaijan that supports DRR and disaster risk management. The Ministry is responsible for the following areas:

- Civil defense;
- Protection of the population during natural and human made disasters;
- Prevention of emergency situations and elimination of their consequences;
- Fire security;
- Safety of people in water basins;
- Security of smaller vessels' operations;
- Technical safety in industry and mountain-mine works;
- Safety in construction;
- Drafting of government policy and regulations on the state material reserves funds;
- Management, coordination and supervision on the areas mentioned above;
- Protection of strategic facilities, objects and installations in cases of imminence/occurrence of emergency situations

The Ministry has the following services:

- State Fire Protection Service (Fire risk reduction and management)
- Fire Control Service (Assistance and control over fire safety)
- Civil Defense Troops (Rescue and evacuation in emergency situations)
- State Agency for Control over Construction Safety (Control over structural safety of public buildings during construction, control over building standards)

Ministry of Education: The Ministry of Education is a central government body that implements national policies in education. The Ministry is responsible for including DRR related teaching materials and lesson plans into school curricula via its national curriculum. Current school curricula reflect government policy in terms of Disaster Risk Management well. The Ministry of Education is also responsible for drafting future educational policies.

Ministry of Ecology and Natural Resources: The Ministry is the main government body for protection of the environment in Azerbaijan. Protected areas include the vast majority of all forested areas. These protected areas serve as a buffer for natural hazards and considerably reduce risks. The Ministry controls grazing and logging in mountain regions of Azerbaijan, which are the main causes of landslides and flash floods. In other words, the Ministry contributes to DRR through control over land use and protection of the environment.

Ministry of Health: The Ministry of Health is responsible for implementing health policy and governing the vast majority of medical services in Azerbaijan. State Medical Emergency Service is responsible for providing emergency health services during all types of disasters. The Ministry also contributes to DRR through improving health services. Low-level or non-existent health services are a main cause of vulnerability.

Municipalities: Municipalities are responsible for carrying out land use management and development practices in all municipality lands. The laws of the Azerbaijani Republic give a solid basis to municipalities to carry out all types of structural and non-structural activities in municipality lands. Construction of facilities (e.g., schools, hospitals, bridges, roads) that reduce disaster risks may be carried out by municipalities. Municipalities are also in charge of initiating public control over use of natural resources.

Non-governmental Organizations and Civil Society Groups: Non-Governmental Organizations and Civil Society Groups are independent organizations that represent the public voice in disaster risk management activities. These organizations, in partnership with governments and major groups in society, have key roles to play in promoting the objective of sustaining resilient communities to avert or reduce the impact of these disasters. DRR related awareness raising, training, and public control over the work of institutions are the main activities that are carried out by non-governmental organizations.

Private Business: Many midsize and small enterprises represent private business. This group is mainly interested in establishment of a comprehensive warden system and forecasting. Gilan Holding has a broad palette of activities that include tourism, husbandry, dairy, food and juice production. The holding creates additional employment opportunities to local residents and reduces the vulnerability of these people. The Gabala-Duruja highway not only makes a big contribution to tourism and employment, but also serves as the main road for some mountain communities.

2.5 Gabala District Development Planning

Integrated Disaster Risk Management and mainstreaming should be an important part of national and local development plans in the regions, where disaster risks are very high. Unfortunately, in most cases state and local development plans in Azerbaijan do not take into account disaster risk reduction strategies. The state program on socio-economic development of the regions on 2014–2018 is the main document that provides ground for economic development of the regions. This document includes economic development plans of regions, including Gabala District. The Program stipulates that socio-economic development of the country should provide for sustainable and human centered development of the country. However, the program has no clear mainstreaming mode of disaster risk management activities. In addition, there is no single document that would reflect all of the development activities for the next 4–5 years; several documents that came from various institutions comprise these development activities.

UNICEF's Gabala Working Group that was re-established in May of 2015 started to collect this information with the aim of making one single document. This document includes plans of various organizations, including ministries, private business, local executive powers, and NGOs.

Moreover, the state program on socio-economic development only includes activities that have to be carried out during the next three years. Therefore, Gabala Working Group started to gather information regarding the intended development activities for the next five years. In addition to the development plan, the working group collected information regarding all types of activities that have DRR relevance. This collected information includes the following (Annex 1.2):

- Awareness raising and educational activities
- Support of agricultural sector
- Road and bridge constructions
- Construction of hospitals and medical points
- Construction of firefighting points
- Planting of trees along rivers that cause flood risk
- Construction of new schools or restoration of schools
- Construction of gas supply pipelines in villages
- Constructions of public buildings that could be used during emergency situations
- Creation of school DRR groups in most vulnerable villages
- Activities that may reduce vulnerability of children and communities
- Construction of new hotels and all types of public buildings

In addition to the development plan, Gabala Working Group and DRR experts identified the most important problems of schools and communities that would reduce vulnerability of children and increase resilience.

2.6 Vulnerability of Development Sectors to Disasters in Gabala District

2.6.1 Agriculture

Risk assessment shows that most of the area of the Gabala District is located in disaster prone zones. Because agriculture is dependent on the natural resource base, natural hazards may easily reduce or totally impact agricultural production. Climate changes, floods, and landslide may effect agricultural production easily. For example, after the 2015 hail phenomenon, fruit production in most villages was considerably decreased. According to estimations of Tikanli municipality, the total damage from hail was nearly 120,000 USD. Negative agricultural practices may also exacerbate some hazards. For example, incorrect plowing in upstream villages of Gabala often causes landslides. Therefore, mainstreaming disaster risk reduction into agricultural practices should be directed to reduce the impact of hazards on agriculture and also reduce negative effects of agricultural activity on disaster risks. Various state programs supported by the government of Azerbaijan consider sustainable use of lands and natural resources. For example, “National Program on Environmentally Sustainable Social and Economic Development” (2003) stipulates that management of soil resources in Azerbaijan should be managed in a sustainable way, which in turn would reduce landslides and soil degradation. The Second National Communication of Azerbaijan Republic to the UNFCCC suggests continued work on selection and introduction of drought resistant and highly productive wheat and vine varieties. Introduction of these plants would reduce disaster risks, decreasing vulnerability of people to water related hazards. Development and implementation of government programs to facilitate growth in the manufacture of competitive products by processing plants in the agricultural sectors would increase capacity of the local population, considerably reducing poverty. Within these programs, the private sector has made considerable improvement in the agricultural sector, simultaneously reducing people’s vulnerability to hazards and making new employment opportunities. Specific activities in Gabala District under consideration for the 2015–2020 years are given in Annex 1.2.

Support for creation of large farming enterprises in Gabala District is one of the main activities that is considered for the next 3 years. This activity may increase competitiveness of local farmers and open new workplaces that in turn will reduce poverty in the region. These activities are supported by the aforementioned development programs. Over the years of 2014 and 2015, the State Program of Socio-Economic Development of the Regions successfully contributed to the development of Agriculture in Gabala. Official information of the Ministry of Agriculture confirms that several farming companies have successfully increased production of agricultural goods.

In order to increase resilience in the agricultural sector, the government of Azerbaijan and Islamic Bank are planning to invest in the construction of Yengica Water Reservoir. The total usable capacity of this reservoir will be $51 \times 10^6 \text{ m}^3$ of

water that will allow irrigation of an additional 10,000 ha of land. This will definitely reduce pressure of overgrazing on mountain slopes, giving new prospects for fodder production in downstream areas.

According to the development plan, during the years 2016–2018, major agricultural works will be done in Dizakhli, Aydingishlagh and Garadeyin settlements, where new amelioration-irrigation works are considered. These amelioration and irrigation works include drilling of sub artesian wells in the aforementioned villages.

The Ministry of Agriculture is also going to implement new pasture and land use measures to stop erosion in cultivated areas and pastures. Table 2.2 illustrates all activities in agriculture in Gabala District over the period of 2016–2020.

Table 2.2 Planned activities in agricultural sector (2016–2020)

Action	2016	2017	2018	2019	2020	Organization	DRR element
To support the development of livestock-breeding, wheat production, grape-growing, fruit-growing (gardening) and vegetable-growing	+	+	+			MoA, LDG	Poverty reduction
To strengthen the material -technical base of the infrastructure serving the development of the production of agricultural product	+	+	+	+	+	MoA, LDG	Poverty reduction, Capacity building
Land use improvement in the Gabala city			+	+	+	IDG	Reduced hazard risks
Support involvement in entrepreneurship of vulnerable groups of population, including youth, women, IDPs and disabled	+	+	+	+	+	MEI	Reduced poverty, increased capacity for disasters
Support creation of large farming enterprises						MoA, MEI	Reduced poverty, increased capacity for disasters
Continue work towards implementation of measures required for recirculation of eroded and saline lands owned by agricultural producers with implementation of technical and biological measures	+	+	+	+	+	MoA	Reduced risk of landslides

2.6.2 Tourism

Reliable income sources make the population less vulnerable to natural hazards. The 2002–2005 and 2014–2016 State Programs on development of tourism, as well as the 2009–2015 State Program of Socio-Economic Development of the Regions of Azerbaijan contributed to the development of tourism in all regions, including Gabala District. Over the last 20 years tourism became a second major income source for the local population of Gabala.

As it has been noted, many hotels, tourist attractions, and restaurants were built in Gabala District. House renting has become very popular for local residents as it gives considerable income relative to other sectors of the economy. Due to touristic developments, land prices in Gabala District increased more than 10 times over the period of 2000–2014. According to various action plans, the tourism potential of the district will increase over the years 2015–2020. This includes construction of roads and tracks, highways, skiing areas, etc. For example, construction of hotels in 2016–2020 near the Nohurqishlaq reservoir, construction of a water reservoir close to Yengica village, and increasing the length of mountain highways in the district will give new values to tourism sectors, reducing poverty and vulnerability of the people.

2.6.3 Health and Sanitation

Health issues, access to running water and sanitation issues are the most important features of DRR activities. Without proper sanitation conditions, it is not possible to provide a safe living environment. Unfortunately, most of the schools in Gabala District still lack sanitation facilities. Gabala Working Group proposed that the local government provide several schools with running water during the 2016 year.

All the kindergartens in Gabala have medical staff. However, there are no qualified medical staff in the schools.

Studying recent conditions, Gabala Working Group suggested opening medical vacancies in several schools in 2016. According to the initiative of the group, medical vacancies should be opened in all schools, where more than 300 children receive education. The first schools to hire medical staff will be in Bum, Mikhliqovaq, Tikanli, and Nic.

Almost all the medical points in villages are rather old and need to be repaired (Annex 1.1). The Working Group identified this as a factor increasing disaster risks. However, repair of village medical points was not included in the development plans.

According to the regional development plan, construction of the new building for Gabala District Central Hospital is under consideration for the next three years. Construction of this facility will contribute to reducing vulnerability and increasing resilience of local communities to hazards. Also, during the next five years,

construction of health facilities in Yengica, Tuntul and Laza villages is under consideration.

In addition, within the coming years, government of Azerbaijan is going to launch compulsory social insurance system in all regions that will insure local community members from natural and man-made disasters as well.

2.6.4 Water Resource and Flood Management

As it has been noted, water-related hazards, mainly including floods, are common factors that threaten life and property of people in the region. In addition, droughts have become a second major water-related issue in the district. In order to reduce the risk of these hazards, a broad palette of activities has been carried out. Within the 2009–2015 State Program of Socio-Economic Development of the Regions of Azerbaijan, many types of water supply networks, bridges and roads have been built in the district that considerably reduce the risk of floods and droughts. Additional activities will be carried out for the next five years according to various state programs and local plans. These activities include construction of water supply networks, construction of bridges and roads, as well as implementation of integrated basin management approaches in small river basins. An early warning system which is going to be built in 2016 will considerably reduce risk of floods.¹ In addition, the local government is also planning to restore and make protective walls around the schools. Gabala Working Group suggested increasing protection of several schools in terms of floods and heavy rains.

The major expected activity that would reduce water stress is to construct a flood protection dam for Gabala city. Also, in flood risk zones of Bum and Vandam villages, the forestry department will plant riverine forest belts that will considerably reduce flood vulnerability.

The “Integrating Climate Change Risks into Water and Flood Management by Vulnerable Mountainous Communities in the Greater Caucasus Region” project that is being implemented in Gabala by UNDP aims at modernizing the water and flood management and reducing the impact of climate induced flooding and water stress in the Gabala District. Through this project, launching of Flood Early Warning Systems for the Oguz-Gabala region is under consideration. This Early Warning System will considerably reduce the vulnerability of local communities and schools, since these people will have information about possible floods 48 h in advance.

In addition, according to a new institutional framework that was developed through the aforementioned UNDP project, establishment of additional Water

¹Abbasov (2013) Identification of Institutional Capacity And Needs For Flood And Water Resources Management In Azerbaijan. UNDP document. Available at: <http://wrm.az/reports.html>.

Table 2.3 Planned activities in 2016–2010 with respect to water management

Action	2016	2017	2018	2019	2020	Organization	DRR element
Continue works on improvement of water supply and sanitation systems of Gabala town		+	+	+	+	“Azərsu” OJSC	Improved sanitation and access to safe water
Continue amelioration-irrigation works for improvement of the water supply of the lands of the district, including drilling of sub-artesian wells in Dizakhli, Aydingishlagh and Garadeyin settlements		+	+	+	+	AWM OJSC, lg	Access to running water, improved sanitation, improved irrigation in agriculture, reduced poverty
Continue flood protection works in the district	+	+	+	+	+	AWM, LDG	Reduced flood risks
Continue plantation works along rivers in flood risk zones of Bum and Vandam villages	+	+	+	+	+	MENR	Reduced Disaster Risks, Increased preparedness
Develop and implement the “National Plan for Integrated Water Management” (Action Plan)			+	+	+	MENR, AWM,	Reduced Flood Disaster Risks, Increased preparedness
Strengthen control over use of water facilities	+	+	+	+	+	Azerenerji, Azersu	Improved access to safe water, improved sanitation
Establish a monitoring system for water facilities and hydraulic structures	+	+	+	+	+	MoES	Improved monitoring and forecasting, reduced disaster risks
River bed clean-up from mudflow debris, bank protection, river bed regulation, reinforcement and heightening of existing protective dams	+	+	+	+	+	AWM	Reduced disaster risks, reduced vulnerability, improved protection

(continued)

Table 2.3 (continued)

Action	2016	2017	2018	2019	2020	Organization	DRR element
Determine sources of natural emergency situations for the district, prepare their hazard and risk maps	+	+	+	+	+	MoES, UNICEF	Reduced Disaster Risks, Reduced vulnerability, Improved warden, increased awareness
Launching of Flood Early warning Systems for the Oguz-Gabala region		+	+			UNDP	Reduced Flood Disaster Risks, Increased preparedness
Construction of protective dam in upper part of Gabala city	+	+				AWM	Reduced flood risk in Gabala District
Construction of water reservoir in Bum village			+	+		AWM	Reduced water stress
Construction of Water Reservoir in Yengica village		+				AWM	Reduced water stress, reduced flood vulnerability in downstream villages
Construction of flood protection dams in Tikanli and Mikhlogovaq villages		+	+	+		AWM	Reduced flood risks

Users' Associations in villages is under consideration, where local communities and schools lack water. Several WUA's have already been established and closely work with the local irrigation department.

Additional information regarding the DRR mainstreaming into water management can be found in Table 2.3.

2.6.5 Infrastructure

Well-developed Infrastructure is a most important feature that increases capacity and structural preparedness against disasters. Good hazard resilient infrastructure also provides people access to information during the hazards. Over the last 20 years many types of government activities supported infrastructure development in the district. Roads, connections, Internet and electric lines were constructed to the remote villages. However, the increasing size and density of infrastructure,

Table 2.4 2016–2020 planned activities in infrastructure

Action	2016	2017	2018	2019	2020	Organization	DRR element
School building construction in Blix village	+	+	+			LDG	Reduced disaster risk
School building construction in Mamayli village	+	+	+			LDG	Reduced disaster risk
School building construction in Zargarli village	+	+	+			LDG	Reduced disaster risk
Construction of the town's full secondary school № 5 for 360 students in Gabala City	+	+	+	+		MoE, LDG	Improved teaching environment, reduced disaster risks for school children
Construction of new kindergarten in Gabala City	+	+	+	+		MoE, LDG	Improved teaching environment, reduced disaster risks for children
Construction of new general Secondary School for 220 students in Ziring village		+	+	+	+	MoE, LDG	Improved teaching environment, reduced disaster risks for school children
Construction of general secondary school for 80 students in Yengija village	+	+	+	+		MoE, LDG	Improved teaching environment, reduced disaster risks for school children
Construction of full secondary school for 180 pupils in Muskurlu village		+	+	+		MoE, LDG	Improved teaching environment, reduced disaster risks for school children
Construction of primary school for 80 pupils in Gabala Muskurlu village, town nursery-kindergarten N 4		+	+	+		MoE, LDG	Improved teaching environment, reduced disaster risks for school children

(continued)

Table 2.4 (continued)

Action	2016	2017	2018	2019	2020	Organization	DRR element
Construction of town nursery-kindergarten N 4		+	+			MoE, LDG	Improved teaching environment, reduced disaster risks for school children
Construction of the road and bridges among Nij-Mikhligovag-Uludash-Tikanli-Abrikh villages	+	+	+			MoT, LDG	Poverty reduction, capacity building
Construction of bridges between Bum and Tikanli villages						MoT, Ig	Capacity building
Asphalt paving on inter-village road between Imamlı and Xıratala			+	+	+	LDG	Poverty reduction, capacity building
Improving the electric power supply of the Gabala town and all villages, including the construction and reconstruction of the electric power supply lines	+	+	+	+	+	“Azərenerji” OJSC	Capacity building
Construction of the centralized heating supply for the Gabala town		+	+	+	+	“Azərİstİtik” OJSC	Reduced risk of landslides and floods
Construction of new gas supply pipelines for Bum, Mikhligovag, Imamlı, Mirzabaylı, Uludaş and Tikanlı villages	+	+	+	+	+		Capacity building for schools, reduced risk of disasters
Continue work on improvement of the gas supply of the district	+	+	+	+	+	SOCAR	Capacity building for schools, reduced risk for disasters
Continue work on improving the communication and information services of the district	+	+	+	+	+	MCİT	Better warning capacity
To draft a comprehensive plan for Gabala City.		+	+			LDG	Reduced hazard risks
Major repair of the schools in Cigatelli, Bum, Mirzabaylı, Dizakhli villages	+	+	+	+	+	MoE	Improved teaching environment, reduced risk of disasters

(continued)

Table 2.4 (continued)

Action	2016	2017	2018	2019	2020	Organization	DRR element
Continue improvement of road infrastructure in the city of Gabala	+	+	+	+	+	LDG	Improved communications, reduced vulnerability
Continue work to improve communication and information services in the city of Gabala	+	+	+	+	+	MICT	Improved communications, reduced vulnerability, Improved warden system
Launching of Flood Early Warning Systems for the Oguz-Gabala region		+	+			UNDP	Reduced Flood Disaster Risks, Increased preparedness
^a Restoration of Tikanli School Roof		+				LDG	Reduced child vulnerability
^a Restoration of the entrance floor in Mirzabayli School		+				LDG	Reduced child vulnerability
^a Fencing of mudflow road for Mirzabayli school		+				LDG	Reduced child vulnerability
^a Restoration of Bum school roof		+				LDG	Reduced child vulnerability
^a Restoration of Mikhliqovaq school		+				LDG	Reduced child vulnerability
^a Restoration of Tikanli Middle school		+				LDG	Reduced child vulnerability
Construction of Uludash-Tikanli-Mikhligovaq road		+				MoT	Reduced flood risk
Improvement of electric lines for İmamli village		+				Azerenerji	Reduced flood risk
Construction of Internet line for Uludash village		+				MoT	Reduced flood risk
Construction of flood protection dam in Gabala town							Reduced flood risk
^a Proposed by Gabala Working group							

particularly those providing important services, pose challenges for reducing disaster risks. For example, electric and phone lines to mountain villages are very vulnerable to floods.

Various government programs and action plans support a broad palette of activities directed towards the improvement of infrastructure for the next 5 years. According to these plans electric lines will be replaced with more reliable cables and networks. More detailed information about these plans is given in Annex 1.1.

Gabala Working Group, which works closely with the government, agreed on several activities related to repair and maintenance of schools during the year 2016. These activities will be included into the 2016 district budget. These activities would considerably reduce child risk in the given villages.

It is very important to note that some of these activities, especially those related to restoration of schools, are proposed by the Gabala WG. In most villages school buildings are old, equipment is outdated and there is an urgent need to build new schools in 41 villages (Annex 1.1). In order to increase resilience of schools, 23 new school buildings have been constructed since 2004.

The most important activities related to reduction of child vulnerability are the restoration and constructions of schools and kindergartens. For example, construction of a new general Secondary School for 220 students in Ziring village will enable school children to be in a more reliable environment. Studying conditions of schools, Gabala Working Group also proposed building new school buildings in Bylykh, Mamayli and Zargarli villages. This and many other construction activities are included into 2016–2020 development plans.

Other activities related to infrastructure development are given in Table 2.4.

2.7 Conclusion

Mainstreaming of DRR into Gabala District Development plan is a high priority for the local government. Legal and institutional aspects of DRR have been analyzed. The analysis shows that DRR mainstreaming in Azerbaijan has solid legal grounds. Many types of national programs implemented over the last 20 years show the high desire of the government to reduce child related risks in the region. Over the last 20 years huge efforts have been made to reduce vulnerability of children and improve living conditions in villages.

Proper studies on hazard quantification (particularly flood and sediment hazards), hazard and risk mapping, risk-informed approach, monitoring techniques and programs etc. by making use of cutting edge knowledge and tools as well as relevant capacity building programs can also be supplementary activities that can be included as a part of overall recommendations to deal with disaster risks and their reduction.

Various government programs related to rural development and poverty reduction have been analyzed. The information related to economic development of the next 5 years (2016–2020) has been collected and compiled into one single

document. Additionally, Gabala Working Group, which works closely with the government, agreed on several activities related to repair and maintenance of schools during the next 2016 years. These activities will be included in the 2016 district budget. These activities would considerably reduce child risk in the affected villages.

The DRR activities conducted within the development plan in 2015 and 2016 were a successful beginning of the whole process. Recommendations of the Gabala WG are considered in the budget for 2016. There is strong evidences that recommendations from the WG have influenced the development plan and budget for 2016 and benefitted seven high risk villages with a total population of 3062 children (ca. 8% of the total population of children are under 16).

Local executive powers engage in the detailed planning and day-to-day management of developments. Therefore, development plans and programs such as infrastructure improvements (natural gas or water supply, road construction, flood mitigation, etc.) can be steered to benefit high risk villages and populations.

At the same time, it needs to be recognized that there are a number of complex processes (deforestation, issues related to water and pasture management) that currently increase the risk of flooding in the district and in other regions of the country (see Abbasov and Mahmudov 2009).

The MoES has provided strong support to the DRA and regional level representatives expressed enthusiasm about its results. The DRA has also been very positively received on the national level. UNICEF takes a careful approach to institutionalizing it by piloting the DRA in three more districts to consolidate the experience before presenting a solid package to the government for discussion and eventual adoption.

Annex: Main Priorities for DRR in Residential Areas of Gabala District

Residential area	Needs			
	School	Roads	Medical point	Administrative buildings
Abrykh		Construction	Repair	Repair
Amirvan		Repair of internal roads	Repair	Repair
Aydyngyshlag	Construction	Repair of internal roads	Repair	Repair
Bayli	Construction	Repair of internal roads	Repair	Repair
Bayramkokhaly	Construction	Repair of internal roads	Repair	Repair
Boyuk Amili	Repair	Repair of internal roads	Repair	Repair

(continued)

(continued)

Residential area	Needs			
	School	Roads	Medical point	Administrative buildings
Boyuk Pirali	Construction		Repair	Repair
Bum	Construction		Repair	Repair
Bunud	Construction	Repair of internal roads	Repair	Repair
Bylykh	Construction		Repair	Repair
Charkhana			Repair	Repair
Chukhur Gabala	Repair		Repair	Repair
Corlu	Construction		Repair	Repair
Dandykh	Construction	Construction of a new road	Repair	Repair
Dashja		Repair of internal roads	Repair	Repair
Dizakhly			Repair	Repair
Gabala			Repair	Repair
Gamarvan			Repair	Repair
Garadeyin	Repair		Repair	Repair
Gushlar	Construction	Repair of internal roads	Repair	Repair
Hajally	Repair		Repair	Repair
Hamzali	Construction		Repair	Repair
Hazra	Construction	Repair of internal roads	Repair	Repair
Imamly			Repair	Repair
Jyghatelli	Construction		Repair	Repair
Khyrkhatala	Construction	Construction of a new road	Repair	Repair
Kichik Pirali		–	Repair	Repair
Kotuklu			Repair	Repair
Kurd			Repair	Repair
Laza	Construction		Repair	Repair
Malikli	Repair	–	Repair	Repair
Mamayly	Construction	–	Repair	Repair
Mammadaghaly	Construction		Repair	Repair
Mirzebeyli	Construction		Repair	Repair
Mollashykhaly	Construction		Repair	Repair
Mykhlygovag	Construction	–	Repair	Repair
Nij			Repair	Repair
Nohurgyshlag			Repair	Repair

(continued)

(continued)

Residential area	Needs			
	School	Roads	Medical point	Administrative buildings
Ovjulu			Repair	Repair
Saryhajalli	Repair		Repair	Repair
Savalan			Repair	Repair
Seyidgyshlag	Repair		Repair	Repair
Shafili		–	Repair	Repair
Shamly	Construction		Repair	Repair
Sileyli	Construction	–	Repair	Repair
Solguja		–	Repair	Repair
Soltannukha			Repair	Repair
Syrt Yengija	Repair		Repair	Repair
Tikanly	Construction	–	Repair	Repair
Topbagh		–	Repair	Repair
Tovla			Repair	Repair
Tuntul			Repair	Repair
Uludash		–	Repair	Repair
Vandam			Repair	Repair
Yemishanly		–	Repair	Repair
Yengija	Repair		Repair	Repair
Yeni Dizakhly	Repair	–	Repair	Repair
Yenikand			Repair	Repair
Zalam	Construction		Repair	Repair
Zaraghan	Construction		Repair	Repair
Zergerli	Construction		Repair	Repair
Zirik		–	Repair	Repair

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